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THE CO-ORDINATION OF INDUSTRIAL STUDIES WITH TRADITIONAL SUBJECTS IN THE HIGH-SCHOOL CURRICULUM

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A communication to the *Nation* from Leland Stanford Junior University (November 27, 1913, XCVII, 506) deplores the fact that industrial education is rapidly crowding out of the high-school curriculum those studies usually classed as cultural or traditional. The writer asserts that teachers meet in institutes to talk about social obligation and industrial efficiency and to sneer at intellectual attainment. In all of these statements, he merely expresses an unconfirmed fear. He presents no data to justify his prediction that children will become "noisy, happy, and empty" if they are permitted to select industrial subjects. This article voices the objections most frequently urged against industrial education, viz., that these newer school activities crowd out cultural subjects and fail to stimulate intellectual effort and to measure intellectual achievement.

The addition of industrial education to the curriculum of the Boise, Idaho, High School has produced some results that may comfort this writer to the *Nation* and those who share his fears. During the past five years, thirty-one years of industrial subjects have been added to the curriculum, consisting of ten years of commercial studies, six of agriculture, six of home economics, two of industrial art, three years of shopwork in wood and concrete, and four in mechanical, machine, and architectural drafting. Nine years of cultural subjects have also been added to the curriculum, which now offers thirty-one years of industrial work and thirty-one years of traditional studies. Sixteen years or units of work are required for graduation. If students are to distribute their choice over a curriculum offering sixty-two units, unusual freedom of election must be permitted. Three years of English are required

of all; each student may select to suit his own vocational needs the additional thirteen units necessary for graduation.

The most noticeable effect of this policy has been a marked increase in attendance. In 1908, there were 400 students in the high school. Last year, 997 were enrolled, and this year more than 1,000 will be in attendance. Five years ago, the largest class in the history of the school up to that time was graduated. There were 44 in that class. A year ago, 144 were graduated, and this year more than 160 will be awarded diplomas. In other words, the high-school enrolment has increased 150 per cent in five years, and the number graduating has more than trebled. Whence came this unusual increase? The growth of the city did not occasion it, since the elementary-school enrolment has increased only 11 per cent during the same period. The number of non-resident pupils has not materially increased, as there were collected in tuition at \$40 per capita but \$2,269 in 1914 as against \$2,164 in 1909. Hence these two presumable sources of increase must be eliminated.

The inference remaining is that, as the curriculum broadened and included more and more of industrial work, many children who would not have entered a high school offering exclusively traditional courses were attracted by the industrial studies available. The table presented exhibits the percentage of total school enrolments in the second and the seventh grades of the elementary school, and in the first and fourth years of the high school for the school years ending in June, 1911, and in June, 1914.

TABLE I
GRADE PERCENTAGE OF TOTAL ENROLMENT

Year	Second Grade	Seventh Grade	First Year High School	Fourth Year High School
1910-11	11.82 per cent	7.88 per cent	5.37 per cent	2.46 per cent
1913-14	9.15 "	9.32 "	8.11 "	5 "

The increased percentages of total enrolment in the seventh grade, the first, and the fourth years of the high school for 1914 show the rapidly increasing power of the school to retain the children for the full twelve years. In 1911, the high-school attendance

was 15 per cent of the total enrolment. In 1914, 24 per cent of the total school enrolment were in the high school. The past three years have been characterized by business depression in the Northwest, consequently the school enrolment has not increased by any immigration. The increased high-school enrolment has been occasioned by the fact that a constantly growing percentage of the pupils from the grades are attending the high school, attracted by the variety of the work offered them.

Moreover, the introduction of industrial subjects has not prevented the traditional subjects from enjoying a very wholesome growth. Allowing four subjects for each of the 400 students in attendance in 1909, there were 1,600 registrations in strictly traditional subjects that year. No exact data are available, but the estimate is fair. There were as many students who registered for fewer than four subjects as there were who carried more than four studies. In 1914, there were 997 students enrolled with a total of 4,119 registrations. Of this total, there were, in traditional subjects, 2,864 registrations, an increase of 1,264. Many students have been retained for the high school because they want the industrial work. After they have enrolled and registered for the industrial work that appealed to them, they complete their program by taking one or more cultural subjects. Industrial education has, therefore, not crowded cultural studies out of the Boise High School but has extended these traditional subjects to groups of students who would never have entered the high school had the curriculum offered cultural courses exclusively.

On this subject, the testimony of Professor Arthur Bratton, dean of liberal arts, Whitman College, at Walla Walla, Washington, is interesting. After visiting the school for one week, his comments in a local paper are in part as follows:

You ask me for my impressions of the Boise High School. Perhaps you will best understand what I have to say if I first tell you of the mental attitude with which I came to make my visit.

I had read and heard much of the departures from traditional educational lines, which were receiving so unrestricted a trial here. Many high schools in this section are being modified along much the same lines as are being followed here, but the vigor and whole-heartedness with which the program is being followed by your officers

My own education and experience had led me to regard as of the highest value those courses which are generally classed as cultural, and I was prepared to criticize any change which should seem to lessen the importance of these subjects in the high-school curriculum.

LARGE NUMBER OF STUDENTS

One of the early facts which I learned here was that you have registered nearly a thousand students, a far larger number than is normal for a city of this population. Then, that your senior classes of last year and this are considerably in excess of a hundred, again a larger proportion of students completing the course than is usual. I found also that the number of registrations in the cultural courses has nearly doubled in four years, whereas the population of the city or school district shows no such increase.

I asked several of the teachers in the cultural subjects, particularly languages, as these might be expected to suffer most, about the effect of the free election and the vocational courses on the attendance and quality of work in their classes, and found that they indorsed the opinion that on the whole the work in their departments had been helped rather than hindered. I am disposed to attach high value to these opinions. . . .

I am convinced that not only are many pupils induced to continue in the school who would otherwise have dropped out, but also that in many cases the vocational work becomes the basis of an interest in the cultural courses which increases their usefulness and the demand for them.

The writer to the *Nation* assumes that industrial courses do not stimulate intellectual effort and do not measure intellectual attainment. Many school officials assign these reasons for permitting only a limited minority of the units necessary for graduation to be worked out in industrial lines. No one, however, has ever proven conclusively that traditional branches produce greater intellectual changes in those pursuing them than industrial activities efficiently conducted. But assuming that for those in the high school who may reasonably hope to go to college courses in strictly traditional lines may be advisable and desirable, school managers should remember that students preparing for college are but a small percentage of all who might be in attendance if courses were provided for the vocational needs of the vast majority who may not hope for educational opportunities beyond those afforded by the public schools. The high school is the people's college and the officials who direct its activities should be just as careful to provide the kind of training necessary to prepare the many for industrial

life as they have always been to secure adequate college-preparatory courses for the fortunate few.

The board of education in Boise awards the diploma of graduation to all students who have labored four years in the high school preparing themselves for their own chosen vocation in life. The work of the boy who has prepared himself to enter college is not discredited because the same award of merit is conferred upon the boy who has creditably completed those courses which best prepare him successfully to manage a farm.

Those who elect the vocational courses not only get some vocational equipment but they also receive the best training to stimulate their intellectual effort and to increase their intellectual attainment. Last spring the 250 students who in the previous September entered the high school from the elementary school in Boise were classified into the highest third, the medium third, and the lowest third, the basis of classification being the grades awarded at the end of the first semester in the high school. These groups were then compared with a similar classification of the same students, the grades at the end of the elementary school being the basis of classification. Table II shows the comparison. Those who made the study were asked to

TABLE II

Elementary	High
First	{ First 47 per cent
	{ Second 36 "
	{ Third 17 "
Second	{ First 40 "
	{ Second 41 "
	{ Third 19 "
Third	{ First 13 "
	{ Second 23 "
	{ Third 64 "

determine why there was such a variation of achievement in the grades and in the high school. Why did only 47 per cent of those in the first group in the grades maintain their position in the first group in the high school while 53 per cent fell below that group? Why did only 41 per cent of the second group in the grades maintain their position in that group in the high school and 59 per cent

go above or below it? Why did 36 per cent of the third group in the grades go up into the first and second groups in the high school? To determine the cause of this marked variation in the elementary school and the high school, the individual programs and grades of all the 250 students were examined. Upon entering the high school 82 students selected half or more than half their work from the industrial courses. More than one hundred elected one or more industrial courses. Of the 82 who went intensively into the industrial work, 70 advanced above the group to which they had belonged in the grades, while only 12 merely maintained their position in the same group or fell below it.

To explain this situation, one might suspect that teachers of industrial subjects grade more liberally than those who teach the traditional studies. There was found, however, no foundation for this assumption. No correlation could be established between teachers who grade high and those who grade low, and those who teach cultural subjects and those who conduct industrial activities. The variation of standards in grading was quite as much among the different teachers of English as between the teachers of English and those who teach cooking or sewing. The teachers of mathematics and modern languages varied quite as much in standards in grading as those of agriculture and bookkeeping. The curve of distribution of grades from highest to lowest was about the same for the newer school activities as that for the traditional subjects. Greater liberality in grading by the industrial teachers, therefore, could not be accepted as an explanation of the fact that students of industrial subjects tended to go above the group to which they had belonged in the grades and so to disturb the former alignment as to bring down the ones who selected the strictly traditional subjects.

Seventy of the 82 students who, upon entering the high school, selected mainly industrial work went above the group to which they had belonged in the grades because they were permitted to select courses which appealed to them and for which they soon demonstrated that they possessed some aptitude. Their former grade teachers were surprised at their high-school achievements. These students accomplished little in the grades because there

was nothing in the formal elementary-school curriculum to stimulate, to develop, and to measure the special types of ability they possessed. The compulsory attendance law kept them in school, and so they merely marked time and in a spiritless and listless fashion did as little of the rigid work required as would be permitted. But they possessed ability undiscovered either by themselves or by their teachers. Had the high school not afforded opportunity for the exercise and the development of these special types of ability, the students who possessed them would soon have left it for the more congenial and educative atmosphere of the world outside the school.

Fifty-two per cent of all who elected one or more industrial courses went above their grade group even in the traditional studies with which they completed their programs. This means that they had always possessed abilities which in the grades had been undiscovered even by themselves. The industrial work in the high school afforded them chances to demonstrate their worth and to develop their special aptitudes. Their increased self-respect and self-confidence awakened new hope and new ambition. They therefore attacked even the traditional studies with enough energy and enthusiasm to get better results than they had ever before attained. But the industrial studies had first stimulated their intellectual effort and thereby increased their intellectual attainment when it was measured by their achievements even in the cultural subjects.

The introduction of industrial education into the curriculum of the Boise High School has not, as the writer to the *Nation* and some local critics predicted, crowded out cultural education, but has wonderfully increased registrations in strictly cultural subjects.

Industrial education has not, as some conservatives prophesied, decreased intellectual effort and intellectual attainment. The pupils who elect the industrial courses develop unexpected ability to attack and to master even the cultural subjects.